Docket No.: G0365.0376

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Niels Holmenlund

Application No.: 10/524,713 Confirmation No.: 8418

Filed: September 21, 2005 Art Unit: 3609

For: METHOD AND ENVIRONMENT FOR GROWING PLANTS Examiner: K. C. Hayes

DECLARATION OF JEAN CUYPERS

JEAN CUYPERS declares that:

1. I am employed by Grodan B.V. of Roermond, The Netherlands, in the position of Project Manager, Application and Development. Grodan B.V. is a subsidiary of Rockwool International AS. I have held the position of Project Manager for 6 years. In this position I am responsible for development of growth substrates and their use, especially mineral fiber based growth substrates. Prior to my position as Project Manager at Grodan B.V., I held the position of Manager, Process Development at a different subsidiary of Rockwool International AS, Rockwool Lapinus, for 20 years.

2. I have reviewed the above-identified application and the Office Action mailed 15 October 2008.

3. The Office Action appears to be based, at least in part, on the assumption that all peat has the same water uptake capacity and sinking time. If so, that assumption is not correct. Both of these characteristics are dependent on how the peat was processed. Accordingly, it is not possible to assume that the water capacity is x and the sinking time is y just from the knowledge that the substance is peat. The Office Action seems to rely on this assumption on page 3 in commenting about peat having a greater water capacity than mineral wool which has a density of 60kg/m^2. Because of the water uptake capacity is dependent on how the peat was processed, it is impossible to draw this conclusion from the mere fact that "peat" is being used. Moreover, even if the peat selected did have a greater water capacity than the mineral wool, that does not mean the sinking times were the same or different or which entity had a greater sinking time.

4. The Office Action appears to be based, at least in part, on the assumption that an "ebb and flood" procedure is the same or effectively the same as drought stress. It is not. "Ebb and flood" means that the water supply is not uniform and varies from providing a high amount of water (flood) to the plant at intervals and a lesser amount between those intervals (ebb), all with the object of ensuring that the plants have the optimum amount of water at all times. Drought stress, on the other hand, means that there are periods when there has been a deliberate water deficit for a time sufficient for the water level to fall below the requirements of the plant. "Ebb and flood" systems will rarely, if ever, give rise to drought stress. Allowing the water level to fall below the requirements of the plant is contrary to the object of an "ebb and flood" system.

5. I note that the Office Action asserts on page 2 that Deckers involves use of a first growth substrate "which has a first water uptake capacity and a first sinking time". The use of the "first" and "second" characterizations implies there is something in Deckers

which concerns uptake capacity and sinking time. But the important consideration in Deckers is porosity, not water uptake or sinking time. I have carefully reviewed this reference and can find nothing which uses these terms or their concepts (even if other terminology was being used). For example, there is nothing to suggest that the hydrophilicity and/or water retention of any layer is important. There is nothing in Deckers which states or implies that water uptake capacity and/or sinking time is a result effecting variable even for a single layer, much less that the relative values of two layers are result effecting variables.

6. I see that Deckers mentions that peat, and other materials, had been used as a substrate prior to the invention described therein. Even so, there is nothing in Deckers which suggests use of peat under drought stress conditions. Because dry peat is hydrophobic, it is very difficult to rewet, and this difficulty increases as the dryness of the peat increases. The drought stress process is designed to deprive the plant of water for a significant period of time, during which period any water in the peat is being taken by the plant, thereby drying the peat. If the peat is allowed to dry out significantly, water applied thereafter cannot effectively rewet the peat. This characteristic is particularly significant in commercial practice where large numbers of different pot plants are grown under the same system. Each individual plant will use water at different rates. Thus, when water is reintroduced, the peat in some pots will be dryer than the peat in other pots. The low hydrophilicity of dry peat, becoming lower as the peat becomes dryer, means that pots with dryer peat will take up less water than the pots with less dry peat. This has the consequence of exaggerating any differences in water content with each water application and plant growth is therefore not uniform throughout a batch. Any inhomogeneities in the growth substrate will intensify this effect.

7. Use of a system as set out in claim 1 of the above-identified application, in which the first and second growth substrates are positioned as described and in which the first growth substrate has a greater water uptake capacity and a greater sinking time than the second growth substrate, overcomes these difficulties. When plants are grown under conditions of drought stress the flooding will be applied to the second substrate. This second substrate has higher hydrophilicity (i.e., lower sinking time) and so it takes up water rapidly during the flooding stage. However, because the first growth substrate has a higher water uptake capacity, water moves into the first growth substrate from the second growth substrate after the flooding stage. The result of all this is that uniform amounts of water are taken up by each second substrate during the flooding stage, thus ensuring that each plant receives substantially the same amount of water during each flooding step. These advantages are seen even when the first growth substrate is peat, which, when used alone, has the disadvantages I have discussed above.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: 3 April 2009

Jean Cuypers 03-04-2009.